

## CLAIMS

- 5 1. Diagnostic agent comprising a compound of formula :  
(PEPTIDE)<sub>n1</sub> – (LINKER)<sub>n2</sub> – (SIGNAL)<sub>n3</sub> (I)  
wherein  
1) PEPTIDE is chosen in the group :  
a) X1 – X2 – X3 – X4 - NHOH (II),  
10 wherein  
X1 is absent or X1 is a residue of an alpha-amino glycine, X2 is a residue  
of an amino acid selected from proline, hydroxyproline, thioproline and  
alanine, X3 is a residue of an amino acid selected from glutamine, glutamic  
acid, leucine, isoleucine and phenylalanine and X4 is a residue of an alpha-  
15 amino acid selected from glycine, alanine, valine, leucine ;  
and the hydrogen atom of the amino group in said alpha-amino acid X1  
may be replaced with a member X0 selected from the group consisting of  
acetyl, benzoyl (Bz), benzyloxy, t-butyloxycarbonyl, benzyloxycarbonyl (Z),  
p-aminobenzoyl (ABz), p-amino-benzyl, p-hydroxybenzoyl (HBz), 3-p-  
20 hydroxyphenylpropionyl (HPP).  
  
b) a peptide functionally equivalent to a peptide of a)  
c) a peptidic fragment of (II) functionally equivalent to a peptide of a) or b)  
  
25 2) SIGNAL is a signal entity for medical imaging  
3) LINKER eventually absent represents a chemical link between PEPTIDE  
and SIGNAL  
; and the pharmaceutical salts thereof.
- 30 2. Diagnostic agent of claim 1 wherein X1 is absent or X1 is glycine, X2 is  
a residue of an amino acid selected from proline, hydroxyproline,

thioproline, X3 is a residue of an amino acid selected from leucine, isoleucine and phenylalanine and X4 is a residue of an alpha-amino acid selected from glycine, alanine.

- 5 3. Diagnostic agent of claim 1 wherein PEPTIDE is X-NHOH with X chosen among : Abz-Gly-Pro-D-Leu-D-Ala, HBz-Gly-Pro-D-Leu-D-Ala, Abz-Gly-Pro-Leu-Ala, Bz-Gly-Pro-D-Leu-D-Ala, Bz-Gly-Pro-Leu-Ala, HPP-Pro-D-Leu-D-Ala, HPP-Pro-Leu-Ala, Z-Pro-D-Leu-D-Ala, Z-Pro-Leu-Ala.
4. Diagnostic agent of claim 1 to 3 wherein PEPTIDE is p-aminobenzoyl-  
10 Gly-Pro-D-Leu-D-Ala-NHOH.
5. Diagnostic agent of claim 1 to 4 wherein SIGNAL is macrocyclic or linear chelate chosen among DTPA, DOTA, DTPA BMA, BOPTA, DO3A, HPDO3A, TETA, TRITA, HETA, M4DOTA, DOTMA, MCTA, PCTA and the derivatives thereof.
- 15 6. Diagnostic agent of claim 1 to 4 wherein SIGNAL is a lipidic nanoparticule, a liposome, a nanocapsule wherein the SIGNAL is a carrier of a diagnostic metal chelate.
7. Diagnostic agent of claim 1 to 6 wherein said agent is coupled to a metal element M chosen among an ion of a paramagnetic metal of atomic  
20 number 21-29, 42-44, or 58-70, namely Gd, or a radionuclide, typically  $^{99}\text{Tc}$ ,  $^{117}\text{Sn}$ ,  $^{111}\text{In}$ ,  $^{97}\text{Ru}$ ,  $^{67}\text{Ga}$ ,  $^{68}\text{Ga}$ ,  $^{89}\text{Zr}$ ,  $^{177}\text{Lu}$ ,  $^{47}\text{Sc}$ ,  $^{105}\text{Rh}$ ,  $^{188}\text{Re}$ ,  $^{60}\text{Cu}$ ,  $^{62}\text{Cu}$ ,  $^{64}\text{Cu}$ ,  $^{67}\text{Cu}$ ,  $^{90}\text{Y}$ ,  $^{159}\text{Gd}$ ,  $^{149}\text{Pr}$ ,  $^{166}\text{Ho}$ .
8. Diagnostic agent of claim 1 to 4 wherein SIGNAL is an iron oxide particle.
- 25 9. Diagnostic agent of claim 8 wherein the particle is coated with a gem-bisphosphonate.
10. Use of a compound of claim 9 for the diagnostic of a cardiovascular/atheroma disease.
11. Use of compound of claim 1 to 9 for the preparation of an agent for the  
30 diagnostic of a cardiovascular/atheroma disease.

12. Method of preparation of a compound of claim 1 to 8 comprising the coupling of a peptide X1 -X2 -X3 -X4-NHOH and a SIGNAL entity.

5 13 Method of detecting, imaging or monitoring the presence of matrix metalloproteinase in a patient comprising the steps of: a) administering to said patient a diagnostic agent of claim 1 to 9 ; and b) acquiring an image of a site of concentration of said diagnostic agent in the patient by a diagnostic imaging technique.

10 14 Method of detecting, imaging or monitoring a pathological disorder associated with matrix metalloproteinase activity in a patient comprising the steps of: a) administering to said patient a diagnostic agent according to claim 1 to 9 ; and c) acquiring an image of a site of concentration of said diagnostic agent in the patient by a diagnostic imaging technique.

15 15. Method according to claim 14, wherein the atherosclerosis is coronary atherosclerosis or cerebrovascular atherosclerosis.

20 16. Method of identifying a patient at high risk for transient cerebral ischemic attacks or stroke by determining the degree of active atherosclerosis in a patient comprising carrying out the method of claim 15.

25 17 Method of identifying a patient at high risk for acute cardiac ischemia, myocardial infarction or cardiac death by determining the degree of active atherosclerosis by imaging the patient by the method of claim 15.